

WHAT IS CLAIMED IS:

1. A method for adaptively controlling a hybrid electric vehicle including an energy generation system, an energy storage system receiving electric current at least from the generation system, and at least one electric motor receiving current from the energy storage system, the hybrid electric vehicle having the ability to operate in one of multiple predetermined component propulsion configurations, comprising:

determining a currently selected component configuration;

generating command signals to vehicle components to establish a defined component architecture;

generating command signals to vehicle components to establish component states corresponding to the determined component configuration; and

generating command signals to vehicle components for operation within determined parameters corresponding to the component configuration.

2. The method of claim 1, further comprising:

determining the component configuration based upon an operator input signal.

3. The method of claim 1, further comprising:

determining the component configuration based upon an externally supplied signal.

4. The method of claim 1, further comprising:

determining the component configuration based upon vehicle system states or conditions.

5. The method of claim 1, further comprising:

determining the component configuration based upon vehicle sensor states or measurements.

6. The method of claim 1, wherein the method specifies a component architecture of at least one energy generation device linked directly to at least one energy storage device and linked directly to at least one electric drive motor.

7. The method of claim 1, wherein the method specifies a component architecture of at least one energy generation device linked directly to at least one electric drive motor and isolating one or more energy storage devices from the at least one drive motor.

8. The method of claim 1, wherein the method specifies a component architecture of at least one energy generation device linked directly to at least one

energy storage device and directly linked to at least one electric drive motor, where at least one other electric drive motor is isolated from the energy storage device and the energy generation device.

9. The method of claim 1, wherein the method specifies a component architecture including at least two energy storage devices, of which at least one energy generation device linked directly to at least one of the at least two energy storage devices and linked directly to at least one electric drive motor, where at least a second of the at least two energy storage devices is isolated from the at least one electric drive motor.

10. The method of claim 1, wherein the method specifies an upper and lower torque limit, power limit, or speed limit for operation of the electric drive motor.

11. The method of claim 1, wherein the method specifies an upper and lower energy generation limit for the energy generation device.

12. The method of claim 1, wherein the method specifies an upper and lower energy storage limit for the energy storage device.

13. The method of claim 1, wherein the step of generating command signals to establish component status includes switching various propulsion components out of electrical communication with other components.

14. A hybrid electric vehicle, comprising an energy generation system, an energy storage system receiving electric current at least from the generation system, and at least one electric motor receiving current from the energy storage system, and a vehicle controller containing multiple predetermined component propulsion configurations, wherein the controller:

determines the currently selected component configuration;

generates command signals to vehicle components to establish a defined component architecture;

generates command signals to vehicle components to establish states corresponding to the determined component configuration; and

generates command signals to vehicle components for operation within determined parameters corresponding to the component configuration.

15. The vehicle of claim 14, wherein the controller determines the component configuration based upon an operator input signal.

16. The vehicle of claim 14, wherein the controller determines the component configuration based upon an externally supplied signal.

17. The vehicle of claim 14, wherein the controller determines the component configuration based upon vehicle system states or conditions.

18. The vehicle of claim 14, wherein the controller determines the component configuration based upon vehicle sensor states or measurements.

19. The vehicle of claim 14, wherein the controller specifies a component architecture of at least one energy generation device linked directly to at least one electric drive motor and isolates one or more energy storage devices from the at least one electric drive motor.

20. The vehicle of claim 14, wherein the controller specifies a component architecture of at least one energy generation device linked directly to at least one energy storage device and directly linked to at least one electric drive motor, where at least one other electric drive motor is isolated from the at least one energy storage device.

21. The vehicle of claim 14, wherein the controller specifies a component architecture of at least one energy generation device linked directly to at least one electric drive motor and linked directly to at least one electric drive motor, where at least one other energy storage device is isolated;

22. The vehicle of claim 14, wherein the controller specifies an upper and lower torque limit, power limit, or speed limit for operation of the electric drive motor.

23. The vehicle of claim 14, wherein the controller generates an upper and lower torque limit, power limit, or speed limit for operation of the electric drive motor corresponding to the selected component configuration.

24. The vehicle of claim 14, wherein the controller generates an upper and lower energy generation limit for the energy generation device corresponding to the selected component configuration.

25. The vehicle of claim 14, wherein the controller generates an upper and lower energy storage limit for the energy storage device corresponding to the selected component configuration.

26. The vehicle of claim 14, wherein the at least one energy generation device, the at least one energy storage device, and the at least one electric drive motor are propulsion components electrically coupled together through a switching

mechanism that can selectively electrically isolate one or more propulsion components from other propulsion components.

27. The vehicle of claim 26, wherein each propulsion component is separately coupled to other propulsion components through a switch mechanism.